

## **MANUALLY OPERATED TRASH COMPACTOR**

### **Description**

#### **Background of the Invention**

#### **Field of the Invention**

5           The present invention relates to trash compactors that use manually applied forces to obtain the necessary motive power for the movable platen thereof and particularly to a compactor that comprises a vertical shaft with a top end that slides in a hinged lever arm handle for forcing the shaft down onto a compactor plate to which the shaft is removably attached so that the shaft releases from the compactor plate and is removed from the trash  
10 container up through the cover into a slot in the underside of the handle for storage and the compactor plate snaps underneath the cover for storage, the pivotally mounted handle may be clamped to the exterior of the lid thereby forming a handle which may act as a handle for lifting the cover.

#### **Description of the Prior Art**

15           Many trash compactors operate by means of mechanical assistance by motors and the like, which may require attachment to an electrical outlet with consequent energy consumption, and the risk of mechanical failure requiring servicing. Manually operated compactors have also been provided with complex mechanisms, which do not stow away when not being used.

20           U.S. Patent #6,314,874, issued November 13, 2001 to Martorella, claims a manual trash compactor having an adjustable arm and stabilizing blocks. The manual trash compactor is for use with a garbage can having an open top end and a closed bottom end. The compactor comprises a hood having an open top end and a bottom end that is

attached to a top end of the garbage can. In addition, attached to the hood is a top or substantially closed surface wherein the top surface has at least one hole. There is also an adjustable arm that has a bottom end that is rotatably mounted on the top surface. The adjustable arm also has an opposite top end. Rotatably attached to the top end of the adjustable arm is a lever arm. A first end of the lever arm attaches to the adjustable arm while there is a second end that is spaced opposite the first end. Along the lever arm is a piston having a top end that is rotatably attached to the lever arm. The piston also has a bottom end that extends through the at least one hole in the top surface, with the bottom end extending into the garbage can. A compression plate is attached substantially perpendicular to the piston at the bottom end of the piston. Thus, to manually compress garbage in a garbage can, a user can close the top, and press down on the second end of the lever arm. This act rotates the adjustable arm and the lever arm so that the piston extends down, substantially perpendicular to the bottom end of the garbage can driving the compression plate onto the garbage and compacting the garbage between the compression plate and the bottom end of the garbage can.

U.S. Patent #3,760,718, issued September 25, 1973 to Adornetto, indicates a trash compactor for attachment to containers, such as a trash or garbage can, for compacting the refuse therein. The compactor attachment includes a plunger with a head for pressing against the deposited trash and a lever arrangement for applying successive increments of pressure to the plunger to compact the refuse engaged by the plunger's head.

U.S. Patent #5,730,047, issued March 24, 1998 to Lindsey, is for a portable refuse compacting container including a container for receiving a flexible refuse collection bag

of the type typically known as garbage bags or leaf bags. Bulky refuse such as leaves, grass clippings and the like may be placed in the refuse collection bag where these materials are compressed by a compacting plate which is loosely received inside the container. The compacting plate is used to compress the refuse by an attached plunger arm which is affixed to the compacting plate and which is pivotally attached to a compaction lever. The compaction lever is pivotally attached to the edge of the top of the container. The compaction lever may be latched in place on the container. The container is provided with wheels for ease in moving either the full or the empty container from place to place. When the compaction lever is latched to the container, the handle of the compaction lever also serves as a handle for moving the container about on its wheels.

U.S. Patent #1,294,211, issued February 11, 1919 to Webley, illustrates a press adapted for use in connection with an ordinary cylindrical receptacle. The press comprises a pair of ears, means for clamping said ears in engagement with the exterior of the receptacle, friction pads carried by the receptacle engaging surfaces of said ears, a compressor follower, and operating means for said follower connected to said ears.

U.S. Patent Application #20030024419, issued February 6, 2003 to Ernst, discloses a lid for fitting to an open-topped refuse container. The lid has a compacting mechanism that comprises a compacting plate mounted under the lid, a telescopically adjustable actuating rod mounted over the lid, and means slidably coupling the plate to the rod through an aperture in the lid such that the rod may be maneuvered from a storage position wherein the rod lies across the lid and the plate is drawn up under the lid to an

operative position wherein the rod stands upright over the aperture and may be pushed downwardly through the aperture to push the plate down into the container.

U.S. Patent #5,090,309, issued February 25, 1992 to Lai, describes a waste container that includes a hollow body having an open top end, a cover detachably  
5 provided on the open top end, and a press member movably mounted on the cover and having a plate portion disposed horizontally inside the hollow body. The press member is vertically movable inside the hollow body to compress garbage inside the hollow body.

U.S. Patent #3,779,157, issued December 18, 1973 to Ross, Jr., concerns a receptacle for receiving, compacting, storing, segregating, and eventual disposal of the  
10 compacted trash. The receptacle comprises an outer holder, an inner removable disposable container, and an overlying combined funnel and cover. The funnel opens into the top of the disposable container. The cover is pivoted to the funnel so as to be swung outwardly therefrom, and is provided with a hole through which a manually actuated compactor or ram may be inserted for crushing the trash.

15 U.S. Patent #4,050,373, issued September 27, 1977 to Hellmann, provides a manual trash compactor that has a housing, which is adapted to receive therein an exchangeable bag for containing the trash with access means to gain entrance to the bag for depositing of trash within the bag. To compact the trash pressure applying means is provided with a plunger having a compacting head for engagement with the contents of  
20 the bag, with gripping means extending outwardly of the housing for moving the plunger axially to reciprocate the head in a compacting direction. Weighting means is associated

with the pressure applying means to add weight to the compacting head, and exit means is provided on the housing to permit removal of the compacted bag.

U.S. Patent #5,845,567, issued December 8, 1998 to Fischer, shows a manual trash compactor that includes a box having an open top. The hand operated compactor  
5 assembly includes a compactor with a member integrally coupled thereto and extending upwardly therefrom for gripping by a user, whereby the compactor may be manually depressed within the box for allowing the compacting of trash therein.

U.S. Patent #5,042,374, issued August 27, 1991 to Klepacki, describes a trash receptacle compactor for compacting trash in a trash receptacle enclosed in a housing,  
10 including a plunger disposed within the housing in alignment with the trash receptacle and lever means outside of the housing and interconnected with the plunger for selectively operating the plunger to compact trash within the receptacle.

U.S. Patent #4,649,813, issued March 17, 1987 to Kehl, discloses a waste compactor apparatus for trash containers of the type with a top assembly having a frame  
15 and a pivoting door, which encloses a central opening of the frame. The compactor comprises a pivot means for the door including a pivot member and a socket which enable the door to be retained in its normal position by gravity, but which permits the door to be easily detached from the frame to enable it to be inserted into the trash container to compress material therein. Once the user has completed the compacting step,  
20 the door is re-engaged with the frame.

U.S. Patent #4,331,074, issued May 25, 1982 to Behman, indicates a combined cover and compactor assembly that may be mounted on a container for trash or other

compactable material which has a housing having at least one side wall defining a transfer and compacting chamber therein. The housing has a side opening located in the side wall serving as an inlet to permit the compactable material to be charged into the transfer and compacting chamber, and a lower end opening in registry with the transfer and compacting chamber. The housing is connectable to the container by a housing support that is adjacent and defines the lower end opening to allow compactable material charged into the transfer and compacting chamber through the side opening to either fall or be forced into the container. A retainer assembly including an upper end opening is disposed at the upper end of the housing to releasably support a compactor within the transfer and compacting chamber. The compactor may act as a cover when it is held by the retaining assembly, or may be disengaged from the retaining assembly to move downward to exert compacting force upon the compactable material present in the transfer and compacting chamber.

U.S. Patent #4,128,055, issued December 5, 1978 to Hellmann, puts forth a manual trash compactor that comprises a housing adapted to receive therein a bag having upstanding walls terminating in an open top for depositing the trash, and formed having a base with vertically extending panels extending upwardly from the base and terminating in an upper open end such that a rectangular configuration is formed to gain access to the housing. Pressure applying means for compacting the trash within the bag is provided with weighting means associated with the pressure applying means to increase the weight thereof to facilitate the compacting of the trash within the bag. Retaining means for releasably securing the open top of the bag within the housing during operation of the

pressure applying means is utilized and comprises a plate operatively associated with each one of the panels to provide retention of the open top of the walls of the bag in fixed relationship to each one of the panels. Mounting means for pivotally securing each one of the plates with respect to one of the panels between an open position and a closed position is provided for permitting the bag to be removed from the housing in the open position and in the closed position compressing the upstanding walls of the bag against the panels. Latching means for releasably retaining each one of the plates in the closed position is provided such that the bag may be filled with trash.

U.S. Patent #4,991,500, issued February 12, 1991 to Knapp, illustrates a refuse compactor device that has a container housing having an open top end for holding a trash bag in which the bag mouth is in registration with and folded over the open top end of the container for receiving trash to be compacted. The compactor device further includes a compactor plate received within the container housing for manual movement from the open top end of the housing toward the bottom end of the housing to compress refuse material in the trash bag. The housing has ventilation apertures in its side wall and bottom to allow air trapped between the bag and the side walls of the housing to be expelled from the container. The compactor plate also has ventilation apertures to allow air included in the refuse to be expelled from the container as the plate is moved into the trash bag and housing. The compactor plate further has an opening to receive therethrough the mouth end of the bag for convenient closing of the bag mouth.

U.S. Patent #4,658,720, issued April 21, 1987 to Massonnet, provides a refuse bin incorporating compacting means wherein the compacting plate comprises two upwardly

oriented tabs which are placed in housings in the lid to be slidably associated with a control member. Catches facing opposite each other and borne by said tabs come into slides in the control member embedded in a groove in the lid. In this way, by subjecting the control member to a translation, it may, at the end of a stroke, be pivoted with respect to the catches in order to orient it vertically with a view to vertically actuating the compacting plate.

U.S. Patent #4,286,515, issued September 1, 1981 to Baumann, shows a compacting wastebasket comprising a container closed by a lid for receiving and compacting waste paper. The compacting wastebasket includes a volume-occupying lid, which fits inside the container. The container defines a chamber large enough to accommodate individual pieces of waste to be deposited and compacted. The lid is retained in the container-closing position.

U.S. Patent #5,115,736, issued May 26, 1992 to Rodolico, claims a compaction container for domestic solid waste. A cylindrical container is provided with a cover to be firmly fitted thereon having a bayonet coupling and supports for a lever multiplier to supply to a rack rod a force "n" times stronger than the one applied to the levers, the lever multiplier being integral with a cylinder which slides inside a housing with cuts fitted in the cover center to allow a constant compression according to the heap height; force is transmitted onto the waste to compress it with a piston, which is firmly connected with a nut to the lower part of the rack rod.

U.S. Patent #3,929,060, issued December 30, 1975 to Burke, puts forth a vehicle litter compactor for attachment to the interior of an automobile or the like for



compressing accumulated litter in the vehicle. The compactor has a slidable piston mounted in an elongated case with an opening in one side of the casing. The piston is attached to a sliding shaft passing through one end of the casing and may be withdrawn past the opening for insertion of litter, and then the operator may push the shaft and  
5 piston to compress the litter in the opposite end of the casing. The casing has a removable end portion for removing the compacted litter.

U.S. Patent #2,465,839, issued March 29, 1949 to Bloomfield, is for a waste container that comprises an open top receptacle; an open top housing for the receptacle provided with a swingable lid for closing the top thereof; a plunger reciprocally carried  
10 by the lid for movement to and from a position in the waste receptacle to compress the waste therein; and springs attached to the plunger for holding the same inoperative above the top of the receptacle, said plunger having a head thereon substantially the same diameter as the receptacle. The head is disposed above the receptacle when in the inoperative position.

15 What is needed is an inexpensive, easy-to-use manual trash compactor which fits on any trash container with components that store out of the way in normal usage of the trash container and easily assemble for use in compacting the trash in the container.

#### **Summary of the Invention**

An object of the present invention is to provide an inexpensive, easy-to-use  
20 manual trash compactor which fits on any trash container with components that store out of the way in normal usage of the trash container and easily assemble for use in compacting the trash in the container.

In brief, a lever arm handle hinged at one end to an edge of a trash container cover, the handle having a slot along a bottom of the handle and a vertical shaft having a top end which fits slidably within the handle and which shaft passes downwardly through a hole in the center of the cover, and a bottom end of which shaft is removably attached to a compactor plate so that during compacting the lever arm presses down on the shaft which forces the compactor plate to compact the trash with the top of the shaft sliding in the handle slot as the handle pivots downwardly, and which shaft is removed from the compactor plate, pulled up out of the container and attached in the handle slot for storage, and the compactor plate is snapped under the cover for storage during normal use of the trash container with the handle snapped into a clamp on the other edge of the cover from the hinge so that the handle can be used to lift the cover for throwing trash in the container.

An advantage of the present invention is that it provides an inexpensive, easy-to-use manual trash compactor which fits on any trash container with components that store out of the way in normal usage of the trash container and easily assemble for use in compacting the trash in the container.

#### **Brief Description of the Drawings**

These and other details of my invention will be described in connection with the accompanying drawings, which are furnished only by way of illustration and not in limitation of the invention, and in which drawings:

FIG. 1 is a cross-sectional view of a trash container with the cover, lever arm handle, vertical shaft, and compactor plate of the present invention showing the lever arm handle pressing down the vertical shaft onto the compactor plate to compact the trash in the trash container;

5           FIG. 2 is a perspective view of the circular cross-section trash container and components of the invention of FIG. 1 showing the compactor plate (dashed) stored in the bottom of the cover and the vertical shaft stored in the lever arm handle which is attached to the cover by a pivot connection at one end and a removable clamp at the other end to serve as a handle for the cover in depositing trash in the trash container and  
10   removing trash from the trash container;

FIG. 3 is a broken perspective view in partial section of the trash container and present invention of FIG. 1 showing how the pivotable top of the vertical shaft slides in a slot in the lever arm handle when the lever arm handle is pivoted down to compact the trash;

15           FIG. 4 is a cross-sectional view of the pivotable top of the vertical shaft in the slot of the lever arm handle;

FIG. 5 is a broken perspective view in partial section of the lever arm handle showing the vertical shaft being pivoted into the slot of the handle for storage;

FIG. 6 is a partial cross-sectional view taken through the cover and the compactor  
20   plate showing an alternate threaded vertical shaft and threaded central hole in the cover;

FIG. 7 is a perspective view of a rectangular cross-section trash container with a rectangular cover and a rectangular compactor plate.

**Best Mode for Carrying Out the Invention**

In FIGS. 1-7, a manual trash compactor device 20 and 20A which fits on any trash container 30 and 30A with components that store out of the way in normal usage of the trash container and easily assemble for use in compacting the trash in the container.

5        The trash can cover 23 and 23A is adapted to fit securely and removably on a trash container 30 and 30A. The cover 23 and 23A comprises a top surface 13 having a central opening 14 therethrough, a pivot means 18, preferably a bracket and pin, at one edge of the top surface, a latch means 17 at an opposite edge of the top surface, and a peripheral rim 12 and 12A extending downwardly from the top surface for engaging a top  
10        of a trash container 30 and 30A to cover the trash container. The peripheral rim 12 and 12A has a series of tabs 15 around the bottom 11 of the cover 23 and 23A serving as a means for storing the compactor plate 27 and 27A or any flat object under the cover.

      A lever arm handle 22 is pivotally attached at a first end to the pivot means 18 of the cover 23 and 23A with a pin through the end of the handle and removably attachable  
15        at a second end to the clamp means 17 which holds the handle 22 and 22A with a tight friction fit so that the handle is adapted for lifting the cover 23 and 23A with the second end of the handle fixed in the clamp means 18 as shown in FIGS. 2 and 7. The lever arm handle 22 has a slot 28 through most of the length of the handle which slot is open along a bottom of the handle 22.

20        A vertical shaft 26 and 26A has a pivotable top end 29 which fits slidably within the slot 28 underneath the handle 22 and which shaft 26 and 26A is adapted for passing downwardly through the central opening 14 of the cover during a compacting use of the

trash container as seen in FIGS. 1, 3, and 6. The vertical shaft is further adapted for storing within the slot 28 of the handle 22 during trash placement in the container and trash removal from the container as seen in FIGS. 2 and 7. FIG. 5 shows the vertical shaft 26 being pivoted into the slot 28 of the lever arm handle 22 for storage.

5           A compactor plate 27 is configured to fit slidably in a horizon orientation within the trash container 30 and 30A, such as the circular compactor plate 27 shown in FIGS. 2 and 3 adapted for vertical motion in the circular cross-section trash container 30 and the rectangular compactor plate 27A, shown in FIG. 7, adapted for vertical motion in the rectangular cross-section trash container 30A. The compactor plate 27 and 27A has a top  
10   center means, such as the snap fit rotatable connector 25A of FIGS. 1 and 6 or the pivotable connector 25B, shown in FIG. 3 with a T-end of the shaft insertable through a slot in the compactor plate and pivoted closed for removably connecting a bottom of the shaft to a top of the compactor plate.

          During compacting, as shown in FIGS. 1, 3, and 6, the lever arm handle 22  
15   presses down on the vertical shaft 26 and 26A which forces the compactor plate 27 to compact the trash 40 in the trash container 30 with the top 29 of the shaft sliding in the handle slot 28 as the handle 22 pivots downwardly.

          During use of the trash container 30 and 30A for depositing trash 40 in and removing trash from the trash container or leaving the trash covered, the shaft 26 is  
20   adapted to be removable from the compactor plate 30 and 30A, and to be removable up out of the container and to be attachable in the slot 28 in the bottom of the lever arm handle 22 for storage, as shown in FIGS. 2, 5, and 7. The compactor plate 27 and 27A is

adapted to be storable under the cover 23 and 23A in contact with the tabs 15 on the bottom 11 of the cover 23 and 23A .

In FIGS. 1, 3, and 5, the vertical shaft 26 is a telescoping shaft adapted to telescope outwardly to a desired compacting length for compacting trash 40 in a trash container 30, as shown in FIGS. 1 and 3, and telescope inwardly to a desired storage length for storage in the slot 28 in the handle 22, as shown in FIGS. 2 and 7.

Alternately, in FIG. 6 the central opening 14A in the cover 23 is a threaded opening and the vertical shaft 26A is a threaded shaft adapted to screw down through the central opening in the cover for compacting trash in a trash container.

As seen in FIGS. 1 and 3, the compacting plate 23 is configured in a shape conformable to and smaller than a horizontal cross-section of a trash container 30 so that the compacting plate is adapted for moving vertically within the container with a trash bag 33 between the compacting plate 23 and the trash container 30.

It is understood that the preceding description is given merely by way of illustration and not in limitation of the invention and that various modifications may be made thereto without departing from the spirit of the invention as claimed.